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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/026,547

12/24/2001

David G. Hostetter

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BROOKS KUSHMAN P.C. / STK
1000 TOWN CENTER, TWENTY-SECOND FLOOR
SOUTHFIELD, MI 48075-1238

EXAMINER

CONNOLLY, MARK A

ART UNIT

PAPER NUMBER

2115

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,547

Applicant(s)

HOSTETTER ET AL.

Examiner

Mark Connolly

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-42 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-42 have been presented for examination.
2. Applicant's arguments with respect to claim 1-42 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek US Pat No 6477627.
5. Referring to claim 1, Ofek teaches the method for synchronizing transactions comprising:
 - a. specifying an adjustable synchronicity setting indicative of an acceptable amount of lag for a second computing entity to lag behind a first computing entity in executing commands [col. 9 lines 12-19 and 37-38].
 - b. controlling a level of lag between the computing entities by executing commands at the first computing entity until said synchronicity setting is reached [col. 9 lines 31-33].
 - c. relaying the commands executed at the first computing entity to the second computing entity for the second computing entity to execute [col. 9 lines 34-37].
 - d. postponing executing additional commands at the first computing entity and postponing relaying the additional commands to the second computing entity while said

synchronicity setting is reached until the second computing entity has executed at least some of the relayed commands and lags behind the first computing entity by an amount of lag specified by the synchronicity setting [col. 5 line 66 – col. 6 line 14, col. 6 lines 27-31, col. 7 lines 9-15 and col. 9 lines 31-44].

In particular, Ofek teaches writing to a local (15, 16) and remote storage (42, 43) devices substantially simultaneously. Furthermore, Ofek teaches an adaptive copy mode which allows the writing between the local and remote disks to be “out of synchronism” by a given limit. If this limit is exceeded during the write operations, the system will revert back to a normal synchronous (SYNC) mode of operation, which postpones any further operations involving memory (i.e. writes from host system 13 to system memory 14 and write requests from local system 10 to remote system 11) from occurring until an acknowledgement is returned.

Although Ofek teaches that the limit can be exceeded, it is taught that as soon as the limit is exceeded, the system enters the SYNC mode in order to maintain the lag by the amount specified in the PEND REQ table. To further clarify, let's say for example that the level of acceptable lag between the storage devices is set to a value of 10. This would mean that once the lag reaches a value of 11, the system would immediately enter the SYNC mode. It should be noted that in Ofek, when a write is requested after the lag value has been exceeded, the system write is not performed but rather the system sends a non-immediate retry message to try the write again at a later time [col. 7 lines 9-15]. The examiner is taking official notice that it is notoriously well known in the art that systems can be designed to perform an action once a limit has been reached as opposed to when a limit has been exceeded and thus interpreted as being

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obvious variations of one another and therefore obvious by design choice to implement either means within the Ofek system.

6. Referring to claims 2-5, applicant(s) numerous definitions of a “first computing entity” is construed to be an admission that the criticality does not reside in the type of "computing entity" utilized and hence obvious variations of one another. Ofek teaches that the execution of commands comprises writing data between a first local storage system (15, 16) and a second remote storage system (42, 43) [fig. 1 and abstract].

7. Referring to claims 6-9, applicant(s) numerous means for specifying an amount of lag is construed to be an admission that the criticality does not reside in which means the amount of lag is specified and hence obvious variations of one another. Ofek teaches defining an amount of “lag” as a number of pending write requests [col. 9 lines 20-32].

8. Referring to claims 10-13, applicant(s) numerous definitions of a “second computing entity” is construed to be an admission that the criticality does not reside in the type of "computing entity" utilized and hence obvious variations of one another. Ofek teaches that the execution of commands comprises writing data between a first local storage system (15, 16) and a second remote storage system (42, 43) [fig. 1 and abstract].

9. Referring to claim 14, Ofek teaches writing to the local storage and remote storage substantially simultaneously [col. 5 line 66 – col. 6 line 14 and col. 9 lines 32-57].

10. Referring to claims 15-42, these are rejected on the same basis as set forth hereinabove. Ofek teaches the method and therefore teaches the program and system performing the method.

Response to Arguments

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11. Applicant's arguments filed 8/21/06 have been fully considered but they are not persuasive.

12. In the REMARKS, the applicant argues that 1) Ofek teaches postponing actions after exceeding a specified level of lag as opposed to the claims, which postpone actions once the level of lag, is reached and 2) Ofek does not teach providing an adjustable level of synchronicity.

13. In response to applicant's first argument which contends that the reference patent(s) does not teach the subject matter as claimed, devices which operate "on basically the same principle and in the same manner" wherein the differences, in addition to being well known, "solves no stated problem and would be an obvious matter of design choice within the skill of the art" are obvious variations of one another and thus not patentably distinct. See *In re Kuhle*, 188 USPQ 7 (CCPA 1975).

In particular, both Ofek and the invention as claimed define a system which operates at an adjustable level of synchronicity defined by a value representing an amount of lag that a second device in the system is allowed to lag behind a first device. Both ensure that a second device never lags behind a first device by more than a specified lag value. Again, it should be noted that in Ofek, when a write is requested after the lag value has been exceeded, the system write is not performed but rather the system sends a non-immediate retry message to try the write again at a later time. How a system is designed to operate in relation to a limit value is obvious by design choice, as long as each choice produces the same outcome. This is no more apparent than in loops used in programming languages. Take for example the programming language QBASIC; if the programmer wanted to make the computer count from 1-10, the programmer would run a loop and set a limit value to 10 (the limit value being analogous to the lag value

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above). There are multiple ways in which this could be accomplished. First off, a FOR...NEXT loop could be used which would look as follows:

```
FOR X = 1 TO 10
    PRINT X
NEXT X
```

The loop counts from 1-10 and once X reaches the value of 10, it stops incrementing. This is similar to how the claimed invention recognizes the need to stop once the limit (i.e. lag value) has been reached.

Alternatively, the same operation can be performed using a DO...WHILE loop which would look as follows:

```
Y = 1
DO
    PRINT Y
    Y = Y + 1
LOOP WHILE Y <= 10
```

It should be apparent that as soon as Y reaches 11, the program knows that the limit has been reached. This is similar to Ofek who recognizes that the need to stop once the limit has been exceeded.

Since both scenarios perform the exact same function and produce the exact same output it is obvious that the two can be used interchangeably and wherein the decision to use either/or would be based purely on design choice. It should be apparent that the same applies to the lag

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value set in both Ofek and the claimed invention thus making both obvious design choices of each other.

14. In response to applicants second argument, Ofek teaches fine tuning the value in the PEND REQ table [col. 9 lines 37-38].

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Connolly whose telephone number is (571) 272-3666. The examiner can normally be reached on M-F 8AM-5PM (except every first Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas C. Lee can be reached on (571) 272-3667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mark Connolly
Examiner
Art Unit 2115

mc
November 1, 2006


